Switching From Reference to Biosimilar Adalimumab for Patients With Various Inflammatory Conditions
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Key Messages

• Ten randomized controlled trials and 4 non-randomized studies were identified regarding the clinical effectiveness of switching from reference to biosimilar adalimumab in adult or pediatric patients with rheumatoid arthritis, Crohn disease, ulcerative colitis, hidradenitis suppurativa, plaque psoriasis, or psoriatic arthritis.

• No evidence was identified regarding the clinical effectiveness of switching from reference to biosimilar adalimumab in adult or pediatric patients with uveitis or ankylosing spondylitis and in pediatric patients with polyarticular juvenile idiopathic arthritis.

Research Questions

1. What is the clinical effectiveness of switching from reference to biosimilar adalimumab in adult or pediatric patients with rheumatoid arthritis, ankylosing spondylitis, Crohn disease, ulcerative colitis, hidradenitis suppurativa, plaque psoriasis, psoriatic arthritis, or uveitis?

2. What is the clinical effectiveness of switching from reference to biosimilar adalimumab in pediatric patients with polyarticular juvenile idiopathic arthritis?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the international HTA database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were adalimumab; rheumatoid arthritis, ankylosing spondylitis, Crohn disease, ulcerative colitis, hidradenitis suppurativa, plaque psoriasis, psoriatic arthritis, or uveitis. When possible, retrieval was limited to the human population. The search was also limited to English-language documents published between January 1, 2016, and January 28, 2021. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications.
Results

Ten randomized controlled trials\(^1\text{-}^{10}\) and 4 non-randomized studies\(^11\text{-}^{14}\) were identified regarding the clinical effectiveness of switching from reference to biosimilar adalimumab in adult or pediatric patients with rheumatoid arthritis, Crohn disease, ulcerative colitis, hidradenitis suppurativa, plaque psoriasis, psoriatic arthritis, or uveitis. No health technology assessments or systematic reviews were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

Overall Summary of Findings

Ten randomized controlled trials\(^1\text{-}^{10}\) and 4 non-randomized studies\(^11\text{-}^{14}\) were identified. Seven randomized controlled trials\(^1\text{-}^{4},^{6},^{8},^{9}\) and 1 non-randomized study\(^11\) looked at outcomes related to switching from reference adalimumab to various adalimumab biosimilar drugs for patients with rheumatoid arthritis. These studies found that drug efficacy, safety issues, and clinical response in terms of drug immunogenicity were not impacted for patients with rheumatoid arthritis who had switched from reference adalimumab to any of the identified biosimilar drugs.\(^1\text{-}^{2},^{4},^{6},^{8},^{9},^{11}\) Three randomized controlled trials\(^3\text{-}^{7},^{10}\) looked at outcomes related to switching from reference to various biosimilar adalimumab drugs in patients with plaque psoriasis. Authors of these studies found that switching to the biosimilar adalimumab had no impact on drug efficacy, patient safety, or drug immunogenicity.\(^3,^{7},^{10}\) One non-randomized study\(^11\) looked at outcomes related to switching from reference to a common biosimilar adalimumab in patients with psoriatic arthritis. The authors found that switching to the biosimilar adalimumab was safe and had no impact on drug efficacy.\(^11\) Two non-randomized studies\(^12,^{13}\) found that switching from reference to biosimilar adalimumab was safe and had no impact on effectiveness for patients with inflammatory bowel disease, specifically Crohn disease and ulcerative colitis. One non-randomized study\(^14\) found that switching from reference to biosimilar adalimumab was well-tolerated and had no impact on treatment effectiveness for patients with hidradenitis suppurativa. No evidence was identified regarding patients...
with uveitis or ankylosing spondylitis. A detailed summary of the identified studies can be found in Table 2.

No relevant literature was found regarding the clinical effectiveness of switching from reference to biosimilar adalimumab specifically in pediatric patients with polyarticular juvenile idiopathic arthritis; therefore, no summary can be provided.
Table 2: Summary of Included Studies

<table>
<thead>
<tr>
<th>First author, year</th>
<th>Study characteristics and population</th>
<th>Intervention and comparator(s) of interest</th>
<th>Relevant outcome(s)</th>
<th>Authors’ conclusions</th>
</tr>
</thead>
</table>
| Alten, 2020¹       | Study design: RCT  
Population: Patients with RA  
N = NR | Intervention: Switch from ADL product to adalimumab biosimilar (FKB327)  
Comparator(s): ADL | Immunogenicity (clinical response) | Development of immunogenic response was similar with FKB327 and ADL, and was not impacted by switching and double-switching between treatments |
| Genovese, 2020²    | Study design: RCT  
Population: Patients with moderate-to-severe active RA  
N = 645 | Intervention: Switch from ADL to FKB327  
Comparator(s): ADL | Long-term safety, efficacy, immunogenicity | Safety, efficacy, and immunogenicity were similar among FKB327 and ADL for up to 2 years and were not impacted by single- or double-switching between treatments |
| Hercogova, 2020³   | Study design: RCT  
Population: Patients with moderate-to-severe plaque psoriasis  
N = 443 | Intervention: Switch from ADL to adalimumab biosimilar (MSB11022)  
Comparator(s): ADL | Efficacy, safety, immunogenicity | Efficacy, safety, and immunogenicity were not impacted after a switch from ADL to MSB11022 |
| Wiland, 2020⁴      | Study design: RCT  
Population: Patients with moderate-to-severe RA  
N = 353 | Intervention: Switch from ADL to adalimumab biosimilar (Sandoz adalimumab [SDZ-ADL])  
Comparator(s): ADL | Efficacy, safety, immunogenicity | SDZ-ADL demonstrated similar efficacy, safety, and immunogenicity to ADL, and efficacy was sustained after switching from ADL to SDZ-ADL with no impact on safety |
| Cohen, 2019⁵       | Study design: RCT  
Population: Patients with RA  
N = 467 | Intervention: Switch from ADL to adalimumab biosimilar (ABP 501)  
Comparator(s): ADL | Long-term safety, immunogenicity, efficacy | ABP 501 was found to be similar to ADL for long-term safety, immunogenicity, and efficacy, and the switch from ADL to ABP 501 did not impact immunogenicity |
| Genovese, 2019⁶    | Study design: RCT  
Population: Patients with moderate-to-severe active RA  
N = 645 | Intervention: Switch from ADL to FKB327  
Comparator(s): ADL | Efficacy, immunogenicity, safety | Switching had no effect between FKB327 and ADL |
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</tr>
</thead>
</table>
| Blauvelt, 2018²    | Study design: RCT  
Population: Patients with active moderate-to-severe plaque psoriasis  
N = 465 | Intervention: Switch from ADL to adalimumab biosimilar (GP2017)  
Comparator(s): ADL | Efficacy, safety, immunogenicity | Switching between GP2017 and ADL had no impact on efficacy, safety, or immunogenicity |
| Cohen, 2018⁸      | Study design: RCT  
Population: Patients with active RA  
N = 645 | Intervention: Switch from ADL to adalimumab biosimilar (BI 695501)  
Comparator(s): ADL | Efficacy, safety, immunogenicity | Switching from ADL to BI 695501 had no impact on efficacy, safety, and immunogenicity |
| Weinblatt, 2018⁹  | Study design: RCT  
Population: Patients with moderate-to-severe RA  
N = 542 | Intervention: Switch from ADL to adalimumab biosimilar (SB5)  
Comparator(s): ADL | Efficacy, safety, immunogenicity | Switching from ADL to SB5 had no treatment issues related to safety, immunogenicity, or efficacy |
| Papp, 2017¹⁰      | Study design: RCT  
Population: Patients with moderate-to-severe plaque psoriasis  
N = 308 | Intervention: Switch from ADL to ABP 501  
Comparator(s): ADL | Efficacy, safety, immunogenicity | ABP 501 was found to have similar efficacy, safety, and immunogenicity to ADL, including after switching from ADL to ABP 501 |
| Bruni, 2021¹¹     | Study design: Prospective cohort study  
Population: Patients with adult RA, axial spondylarthritis, psoriatic arthritis, and juvenile idiopathic arthritis  
N = 82 | Intervention: Switch from ADL to SB5  
Comparator(s): ADL | Efficacy and safety | Switching from ADL to SB5 was shown to be safe in patients with RA and was supported in patients with psoriatic arthritis.  
Type of juvenile idiopathic arthritis and associated outcomes NR in abstract |
| Lukas, 2020¹²     | Study design: Prospective cohort study  
Population: Patients with inflammatory bowel disease (measured by Crohn disease and ulcerative colitis indexes)  
N = 186 | Intervention: Switch from ADL to SB5  
Comparator(s): ADL | Efficacy and safety | Switching from ADL to SB5 had no effect on treatment efficacy and no new safety signals were detected |
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Ribaldone, 2020<sup>13</sup> | **Study design:** Prospective cohort study  
**Population:** Patients with Crohn disease  
*N* = 87 | **Intervention:** Switch from ADL to ABP 501  
**Comparator(s):** ADL | Effectiveness and safety | Switching from ADL to ABP 501 was shown to be effective and well-tolerated for the treatment of Crohn disease |
| Ricceri, 2020<sup>14</sup> | **Study design:** Retrospective observational study  
**Population:** Patients with hidradenitis suppurativa  
*N* = 11 | **Intervention:** Switch from ADL to SB5  
**Comparator(s):** ADL | Efficacy and safety | Switching from ADL to SB5 was supported in terms of effectiveness and was well-tolerated for the treatment of hidradenitis suppurativa |

ADL = reference adalimumab; NR = not reported; RA = rheumatoid arthritis; RCT = randomized controlled trial.

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**References**

**Health Technology Assessments**

No literature identified.

**Systematic Reviews and Meta-analyses**

No literature identified.

**Randomized Controlled Trials**


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Non-Randomized Studies


Appendix 1: References of Potential Interest

Systematic Reviews

Methodology Not Specified

Non-Randomized Study

Alternative Outcome – Pharmacokinetic Evaluation

Review Articles

Additional Information

Product Assessment Report

Note: Refer to Section 2.5.3. Discussion on Clinical Efficacy: Design and Conduct of Clinical Studies (p. 63).